

**Section II (Remarks)****Amendment of Claims 1 and 18**

Claim 1 has been amended herein to recite the outer diameter of the microtubular elements as being in the range of from 10 micrometers to 1 millimeter, as described at paragraph [0023] of the application as published (U.S. Patent Application Publication 2004/0191588). The remaining amendatory recitals have been reintroduced from earlier prosecution.

Claim 18 has been amended to reintroduce amendments therein from earlier prosecution.

Accordingly, no new matter (35 USC §132) has been introduced.

**Rejection of Claims, and Traversal Thereof**

In the December 12, 2007 Office Action, claims 1, 10, 16-25, 27-30, 49 and 50 have been rejected under 35 USC §103, including:

- a rejection of claims 1, 10, 16-20, 22-25, 27 and 28 under 35 USC §103 as unpatentable over Amendola, et al., U.S. Patent 6,534,033 ("Amendola") in view of Kuespert, U.S. Patent 6,228,146 ("Kuespert");
- a rejection of claim 21 under 35 USC §103(a) as unpatentable over Amendola in view of Kuespert as applied to claims 1, 10 and 16-18, further in view of Henis, et al., U.S. Patent 4,230,463 ("Henis"); and
- a rejection of claims 29, 30, 49 and 50 under 35 USC §103(a) as unpatentable over Amendola, in view of Kuespert as applied to claims 1, 10, 16-18 and 22, further in view of Hockaday, et al., U.S. Patent Application Publication 20010045364 ("Hockaday").

Such rejections of the claims are traversed, and reconsideration of the patentability of the claims, as herein amended, is requested, in light of the ensuing remarks.

### **Patentable Distinction of Amended Claims Over the Cited References**

The Office Action has conceded that Amendola does not teach a plurality of microtubular elements, carrier material for target gas, etc., but concludes that it would have been obvious to modify the Amendola hydrogen generation system to include a plurality of microtubular elements in the housing and carrier material, and additional elements

**“in order to facilitate the separation of gas from a liquid carrier material by integrating a plurality of permeation units into the housing of the hydrogen generation system.”**

(December 12, 2007 Office Action, page 6, lines 9-11)

This rejection of claims 1, 10, 16-20, 22-25, 27 and 28 based on Amendola in view of Kuespert is therefore premised on the hypothesis that:

- the modification of Amendola is in some way necessary, desirable or otherwise motivated “in order to facilitate the separation of a gas from a liquid carrier material” and
- this hypothetical objective is achieved “by integrating a plurality of permeation units into the housing of the hydrogen generation system” of Amendola.

This rationale for the rejection therefore requires the assumption that the Amendola system has a gas/liquid separation character that would in some way be expected to be improved by integrating an assembly of permeation tubes from Kuespert in the Amendola system. *A priori*, where is this based in the disclosure of the respective references or in the knowledge of those in the art?

It is fundamental that a rejection under 35 USC §103 must contain specific identification of the particular basis for combination of reference teachings, and that a convincing line of reasoning supporting the rejection must be presented. See **MPEP 2144** (“Sources of Rationale Supporting a Rejection Under 35 USC 103”), citing *Ex parte Clapp*, 227 USPQ 972 (Bd. Pat. App. & Inter. 1985) (examiner must present convincing line of reasoning supporting rejection).

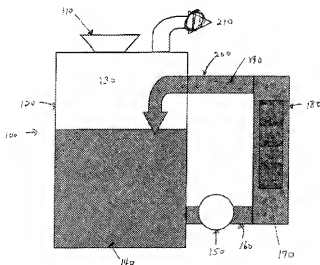
This legal requirement of MPEP 2144 therefore is to be contrasted with the statement at page 9 of the Office Action that “the examiner maintains the assertion that the Amendola reservoir can be modified by the Kuespert permeation tubes.” This statement (“can be modified”) is merely an assertion, and does not tell how or why one would modify the references in the hypothetical manner, particularly since the reason given at page 6 of the Office Action (“in order to facilitate the separation of gas from a liquid carrier material”) fails to state exactly what structural implementation, modification or aggregation would be effected. Specifically, there has no identification of where the permeation tubes would be positioned, how they would operate, or what improvement would result.

There is accordingly no “convincing line of reasoning” that must present to support the rejection.

There is no explanation of the manner in which implementation of the hypothetical modification would be made.

There is no identification of how the deployment of permeation tubes in Amendola would achieve a better result than is achieved by Amendola alone.

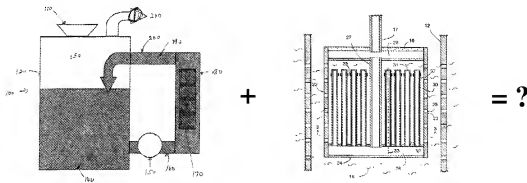
The system of Amendola being relied on in the rejection is shown in FIG. 9 of Amendola, reproduced below:



As shown by this drawing, the hydrogen gas after being generated in contact with the catalyst, disengages from the liquid as the liquid falls into the bulk liquid volume in the tank, with the

disengaged gas collecting in the head space of the tank. There is thus a very simple and effective gas-liquid separation, with the disengaged gas overlying the liquid. Further, there is no disclosed or apparent infirmity in this arrangement, that would suggest its modification.

Despite this lack of basis, and the evident simplicity and effectiveness of Amendola, it is suggested in the Office Action that it would be obvious to modify Amendola with the tubular assembly of Kuespert:



but it is obvious that there is no basis in the references for such modification, and it is not apparent how this hypothetical combination would even take place, since any arbitrary extraction of tubes from Kuespert would require arbitrary discarding of other essential components of Kuespert, and the arbitrary introduction of such tubes into Amendola.

If tubes were introduced into Amendola (although it is not apparent how), the simple “waterfall” arrangement of Amendola that produces gas-liquid separation would be altered in some unexplained and non-apparent manner to produce a resulting installation that would necessarily be more complex (because additional components – the tubes – would be added), more expensive (because additional components – the tubes – would be added) and more prone to operational problems (because more components with additional failure modes would be present).

Accordingly, since the Amendola system already effects a simple and efficient separation of gas from liquid, there is no reason to modify it in any manner that would (1) increase its capital cost, (2) increase its complexity, and/or (3) interfere with the arrangement taught by Amendola of a bulk liquid volume in direct contact with a bulk gas volume to effect phase separation,

particularly when it is not apparent how the Kuespert multiple tube array could be structurally integrated with the Amendola apparatus.

Plainly stated, there is no reason why one would take the very simple arrangement of Amendola and seek to add cost and complexity where none is logically required. In this respect, the rationale advanced in the Office Action, “in order to facility the separation of a gas from a liquid carrier material” fails to state any motivating basis whatsoever, since gas/liquid separation is already effected in a simple and efficient manner by the Amendola system.

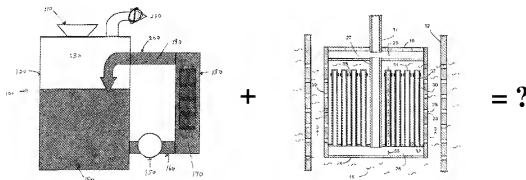
Claims 1, 10, 16-20, 22-25, 27 and 28 are therefore patentably differentiated over Amendola in view of Kuespert.

The rejection of claim 21 based on Amendola in view of Kuespert and further in view of Henis is predicated on the Amendola in view of Kuespert combination as applied to claims 1, 10 and 16-18. It has been shown above that there is no derivative basis for the present invention in Amendola in view of Kuespert. Accordingly, the isolated teaching of Henis relating to a gas separation membrane does not cure the deficiency of the Amendola in view of Kuespert combination, since claim 1 is indirectly dependent from claim 1, and therefore patentably differentiated over the art for the same reasons as advanced hereinabove in support of the patentability of claim 1.

In like manner, the rejection of claims 29-30, 49 and 50 as obvious over Amendola in view of Kuespert further in view of Hockaday also relies on the Amendola in view of Kuespert combination as applied to claims 1, 10, 16-18 and 22. The Hockaday teaching of a catalytic surface on a hydrophobic porous membrane therefore does not obviate the deficiency of the Amendola in view of Kuespert combination. Claims 29-30, 49 and 50 depend directly or indirectly from claim 1, and are likewise allowable over the art. No *prima facie* basis of obviousness is provided by the Amendola in view of Kuespert further in view of Hockaday combination, in relation to the applicants' claimed invention.

The Office Action at page 9 thereof states that it “maintains the assertion that the Amendola reservoir can be modified by the Kuespert permeation tubes without destroying the fundamental

purpose of Amendola reservoir.” Such statement, however, fails to identify how the Kuespert permeation tubes would be integrated, and there is nothing in either reference of Kuespert or Amendola that would in any way suggest how such implementation could be effected. One is therefore left with only an open question



The “convincing line of reasoning” required by MPEP 2144 is absent. The Office Action fails to give any specifics about how one would modify the references, or exactly what structural implementations and/or aggregations of components would be effected, as to where the permeation tubes would be positioned, or how they would operate, or what improvements would result.

No prima facie case of obviousness is present for applicants’ claimed invention.

It is therefore requested that the rejections of claims 1, 10, 16-25, 27-30, 49 and 50 under 35 USC §103(a) be withdrawn.

#### **Filing of Request for Continued Examination**

Enclosed and concurrently submitted with this response is a Request for Continued Examination under 37 CFR 1.114, for which the fee of \$405.00 specified in 37 CFR 1.17(e) is being paid by on-line credit card payment at the time of EFS submission of this response.

Authorization also is hereby given to charge the amount of any deficiency in fees properly payable for the filing and entry of this response and/or the accompanying RCE to Deposit Account No. 08-3284 of Intellectual Property/Technology Law.

### **CONCLUSION**

Claims 1, 10, 16-25, 27-30, 49 and 50 have been shown to lack *prima facie* basis in the cited references of Amendola, Kuespert, Henis and Hockaday. Such claims patentably differentiate over the art for the reasons set out above, and such claims are now in form and condition for allowance. Issue of a Notice of Allowance is therefore requested.

Respectfully submitted,

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